

TECHNICAL NOTE ON VENTILATION STRATEGY

115 Chatham Street

Produced by XCO₂ for Archel Homes

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1.0 EXECUTIVE SUMMARY

This report has been produced to form part of the planning application for the redevelopment of 115 Chatham Street in Reading, Berkshire, RG1 7JX. This report will demonstrate the proposed development's compliance with Building Regulations Part F, which sets out the minimum requirements to ventilate buildings adequately. Smoke control ventilation has also been considered in this report in line with Part B of the Building Regulations. The final smoke control strategy will require confirmation from Building Control and input from a fire specialist.

The scope of the report is to outline a ventilation strategy for the residential apartments and discuss associated ventilation intake and exhaust locations.

Each apartment is assumed to have a local mechanical ventilation with heat recovery unit (MVHR) with fresh air and exhaust terminations on the external façade.

The ventilation strategy described within this report is to be designed in accordance with the available information at RIBA Stage 2 design. As the overall building design progresses the design intent highlighted in this ventilation strategy must be maintained otherwise an amendment to the planning application maybe required.

2.0 INTRODUCTION

2.1 SITE

The proposed development is a 5-storey building consisting of 54 residential units.

There are two buildings on the site, a two-storey office building which fronts Chatham Street, and a two-storey converted warehouse building to the rear. The buildings front an adjacent car park. A plan showing the site location and the surrounding context is shown in the below figure:

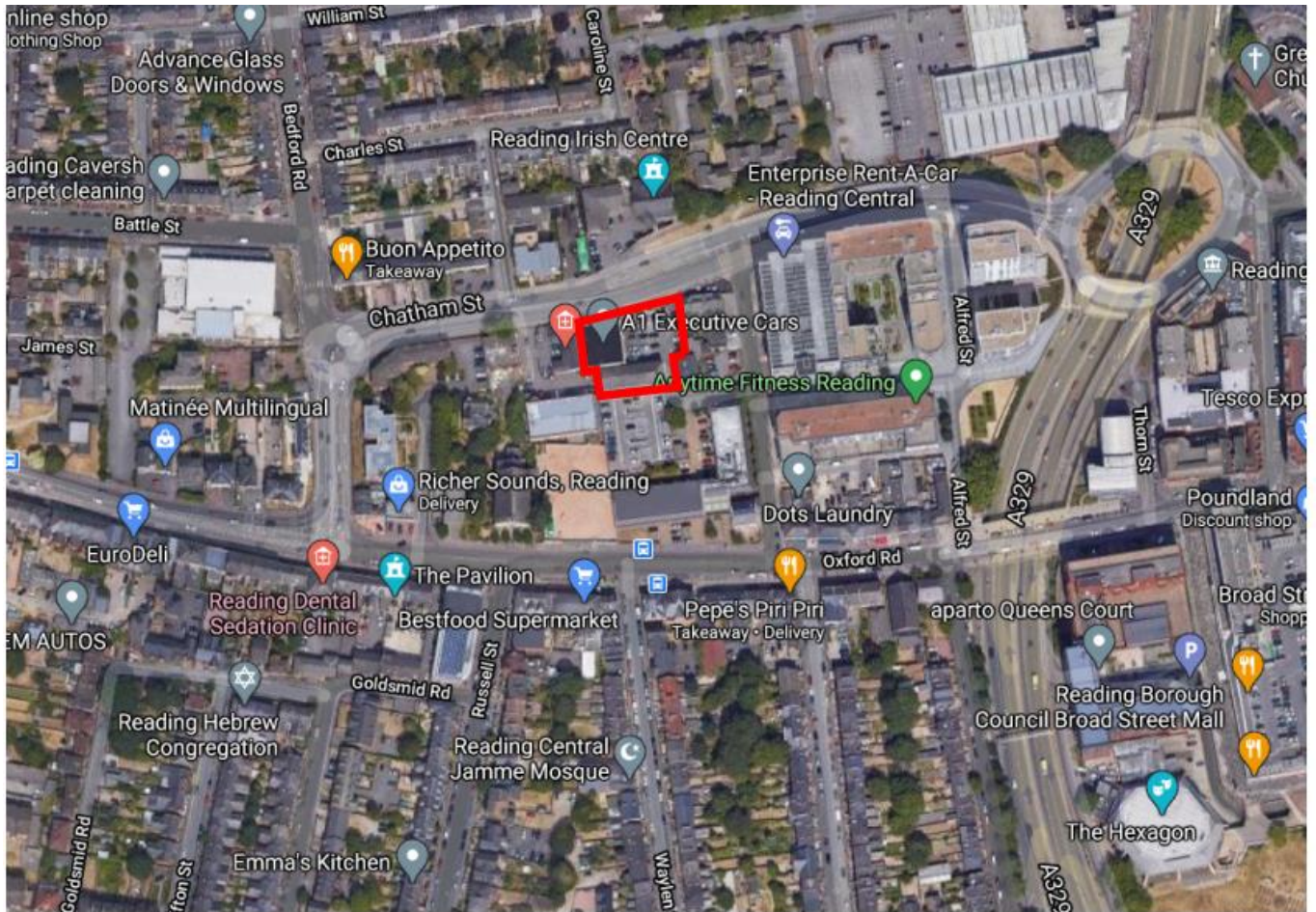


Figure 1: Location Plan

2.2 SCOPE

The scope of this report is to provide a ventilation statement for planning. By utilising the Building Regulations, this report will outline the ventilation strategy for the proposed development. The proposed development's ventilation system design will meet the requirements set out within Part F and Part B of the Building Regulations. Smoke control requirements will need final confirmation from Building Control and the Fire Consultant.

3.0 PERFORMANCE STANDARDS

3.1 BUILDING REGULATION APPROVED DOCUMENT PART F –2010 WITH 2013 AMENDMENTS

Approved Document Part F of 'The Building Regulations' (2010 edition incorporating 2010 and 2013 amendments) states that 'ventilation systems in buildings result in energy being used to heat fresh air taken in from outside and, in mechanical ventilation systems, to move air into, out of and/or around the building'. The mechanical services design has been developed in accordance with this document.

Building Regulations Part F sets out the minimum requirements to ventilate buildings adequately. These regulations will be followed throughout the services design for the project. These regulations have been seen by some to be in conflict with the general requirement to reduce energy; as increasing ventilation rates for fresh air purposes can lead to increased energy to heat or cool incoming air for comfort requirements. However, with modern servicing strategies that incorporate high efficiency heat recovery equipment, the potential conflict between these two requirements can be reduced. Wherever a significant volume of used air is being exhausted to atmosphere, the use of heat recovery will be considered to recover heat energy from outgoing air streams for transfer into incoming fresh air supplies, thereby saving significant primary energy demands for buildings.



3.2 VENTILATION RATES FOR RESIDENTIAL UNITS

The ventilation in each apartment will be designed in accordance with System 4 – Continuous mechanical supply and extract with heat recovery (MVHR), as outlined in Approved Document Part F of the building regulations. The tables below are extracted from the document and state the minimum performance requirements for continuous ventilation systems for dwellings.

The specific fan power for all mechanical ventilation equipment shall be in compliance with the Building Regulations Domestic Ventilation Compliance Guide. Communal plant room ventilation shall be in compliance with BS6644.

Table 1: Mechanical Extract Ventilation Rates

Room	Continuous extract	Minimum low rate
Kitchen	13 l/s	Total extract rate should be at least the whole dwelling ventilation rate given in Table 2.
Utility room	8l/s	
Bathroom	8l/s	
Sanitary accommodation	6l/s	

Table 2: Whole dwelling ventilation rates

	Number of bedrooms in dwelling				
	1	2	3	4	5
Whole dwelling ventilation rate ^{a,b} (l/s)	13	17	21	25	29

Notes:

- In addition, the minimum ventilation rate should be not less than 0.3 l/s per m² of internal floor area.
- This is based on two occupants in the main bedroom and a single occupant in all other bedrooms. This should be used as the default value. If greater level of occupancy is expected add 4 l/s per occupant.

4.0 VENTILATION STRATEGY

The ventilation strategy for the residential areas of the proposed development will seek to follow the recommendations as found within Approved Document Part F of the Building Regulations.

4.1 RESIDENTIAL APARTMENTS

The dwellings are proposed to be mechanically ventilated by a local MVHR unit. Louvres for fresh air intake and exhaust will be located on the façade at high level within the apartment.

Air will be supplied into the living room and bedrooms and extracted from bathrooms, kitchens and utility cupboards. MVHR units will run continuously in the trickle mode operation and will be boosted in wet rooms on demand or via a humidity sensor. The ventilation rates will meet the Approved Document Part F requirements as stated in Section 3.2 and the specific fan power for all mechanical ventilation equipment shall be in compliance with the Building Regulations Domestic Ventilation Compliance Guide. Acoustic measures, including ductwork attenuators, will be adopted if required at the next design stage to mitigate potential noise impacts within the apartments and to neighbouring sensitive receptors. The measured background noise levels and target noise levels are to be advised by the acoustic specialist.

The MVHR units are proposed to be located in the utility cupboard of each apartment and will be accessible. Ductwork inside the apartments will run horizontally in ceiling voids to serve the spaces via air valves. A clear ceiling void depth of 200mm is required in the apartment living rooms and bedrooms to allow for ductwork runs and 300mm is required in corridors and bathrooms to allow for ductwork crossovers. A kitchen recirculation hood is proposed for the kitchen to filter grease from cooking.



Figure 2: Residential MVHR Unit

4.2 SMOKE CLEARANCE STRATEGY

The smoke clearance strategy for the residential floors is assumed to have vertical smoke shaft to ventilate the lobbies adjoining the staircase. An automatic opening vent (AOV) will also be located at the head of the stairway to vent to atmosphere. The dimensions of the smoke shaft, AOV and all ventilation openings shall meet the requirements from Approved Document Part B of the Building Regulations.

If a mechanical smoke ventilation system is used to reduce the smoke shaft dimensions, then a smoke fan will be located on the roof.

The final smoke control strategy will need to be confirmed by Building Control and Fire Consultant at the next design stage.

5.0 CONCLUSION

The ventilation strategy for 115 Chatham Street will incorporate mechanical ventilation for all the apartments. Acoustic attenuation will be advised, if required, at the next design stage.

Each apartment will be mechanically ventilated by a local MVHR unit with fresh air intake and exhaust louvres at high level on the façade.

Final smoke control strategy will be confirmed by Building Control and the Fire Consultant at the next design stage.

The ventilation strategy described within this report is to be designed in accordance with the available information at RIBA Stage 2 design. As the overall building design progresses the design intent highlighted in this ventilation strategy must be maintained otherwise an amendment to the planning application maybe required.

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